

FIG. 1

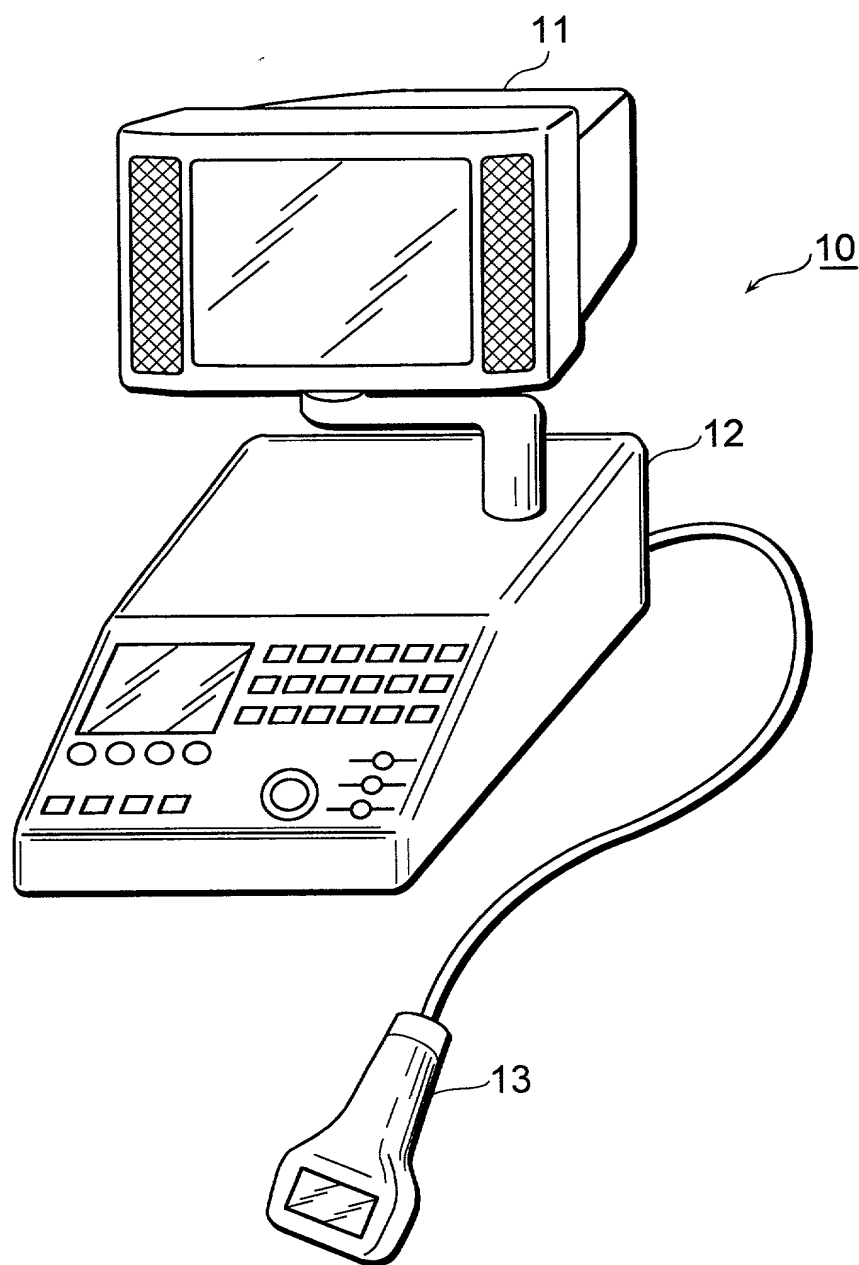


FIG. 2

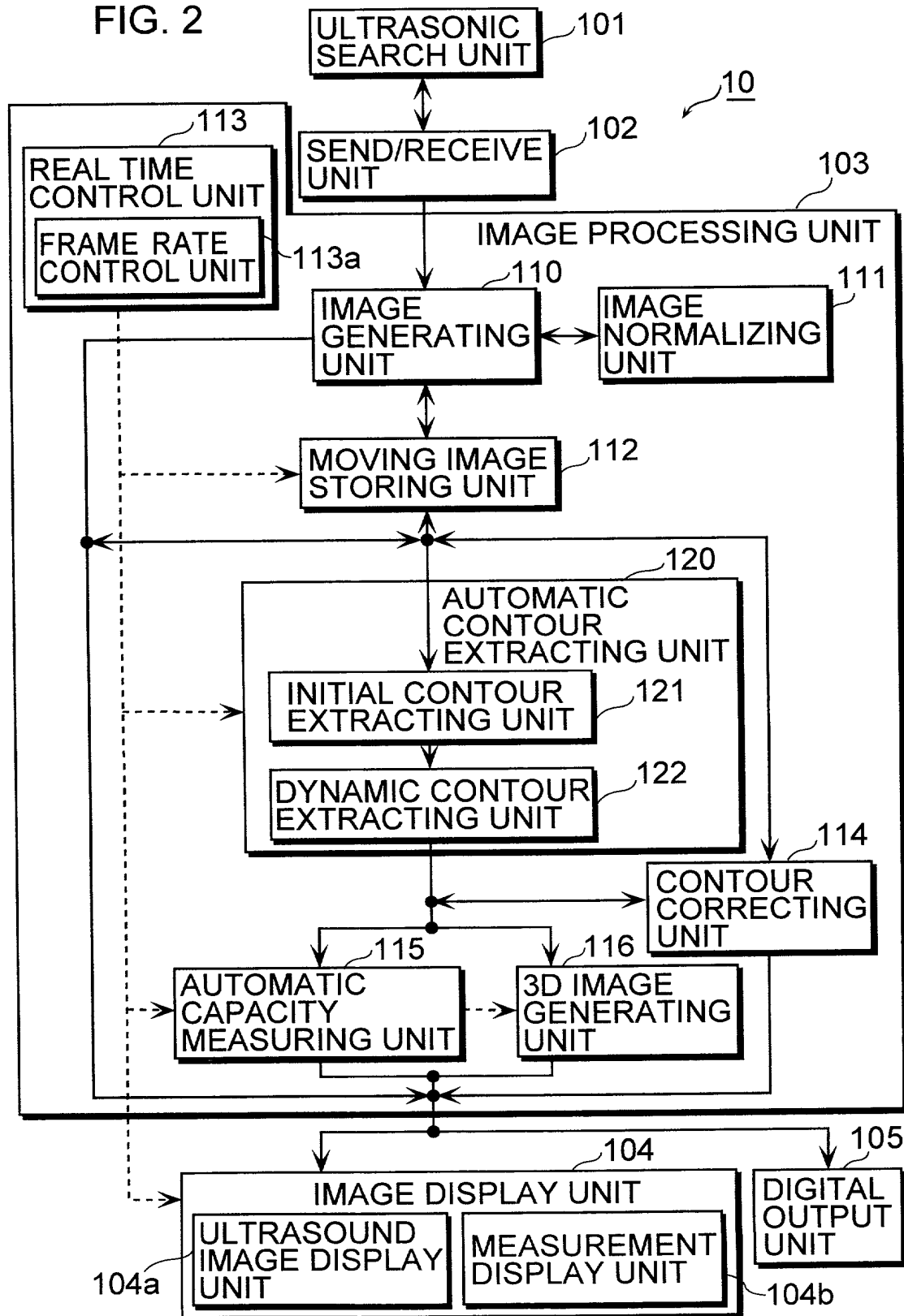


FIG. 3A

TWO  
CHAMBER  
VIEW

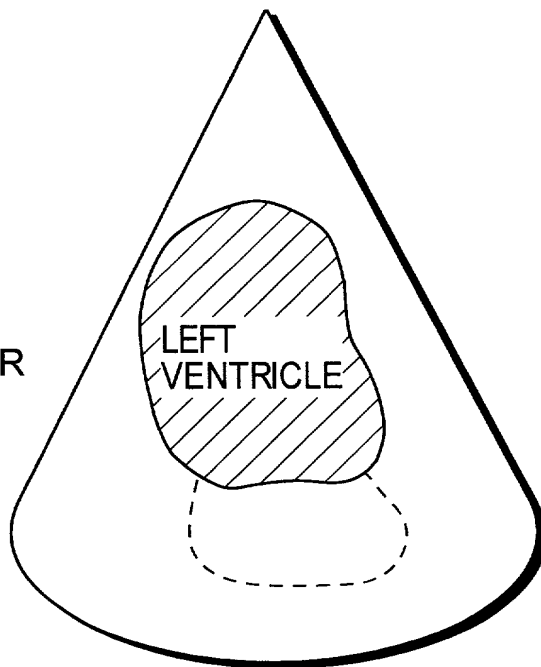


FIG. 3B

FOUR  
CHAMBER  
VIEW

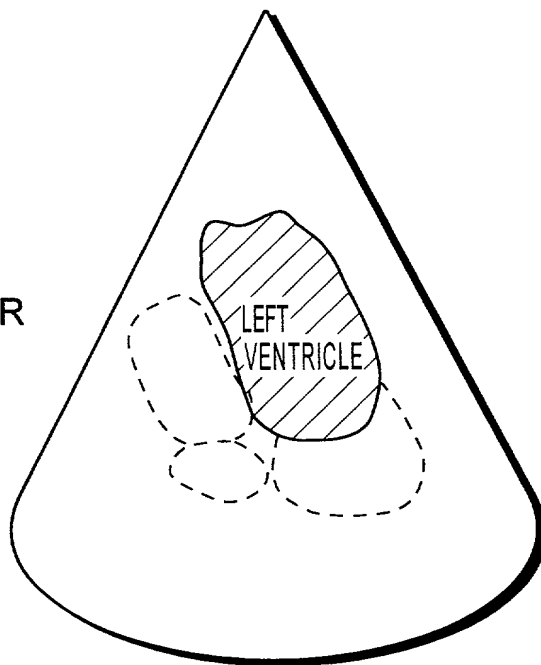


FIG. 4

SINGLE PLANE AREA LENGTH METHOD

MAJOR AXIS "h", CROSS-SECTIONAL AREA "A"



$$\text{VOLUME "V"} = 8A^2/3 \pi h$$

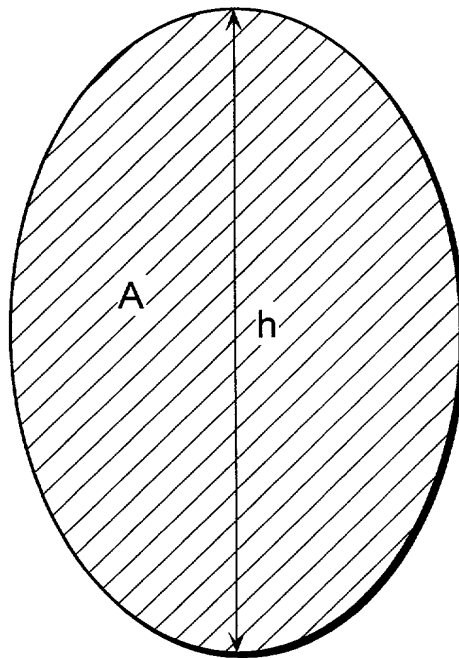




FIG. 6A

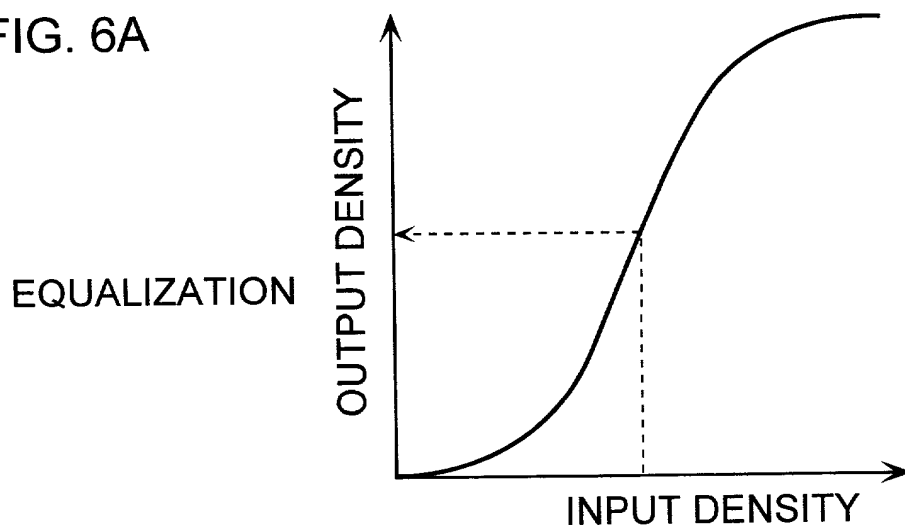
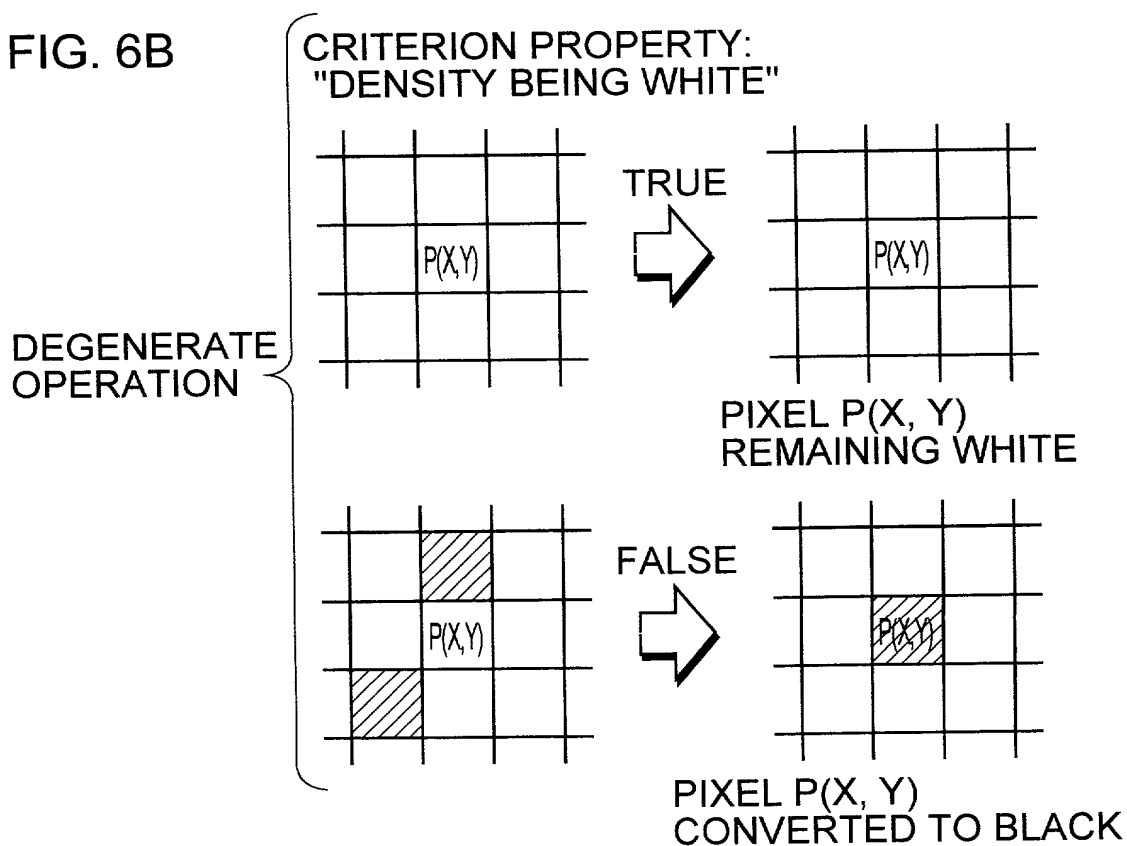
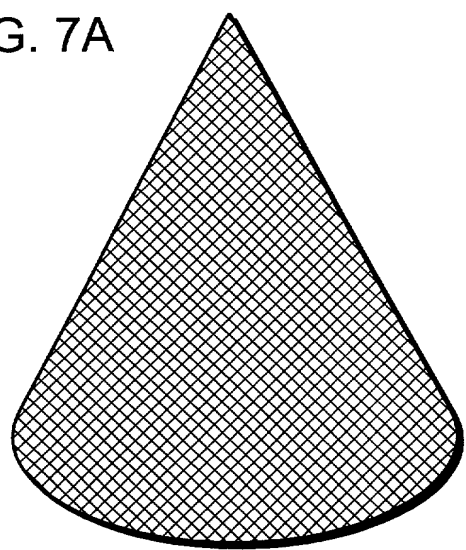


FIG. 6B



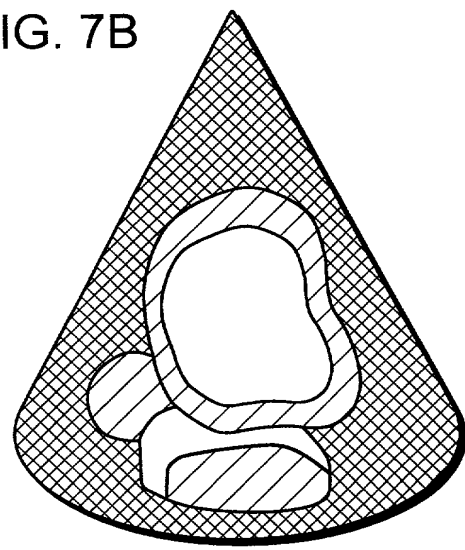
20050916 013002

FIG. 7A



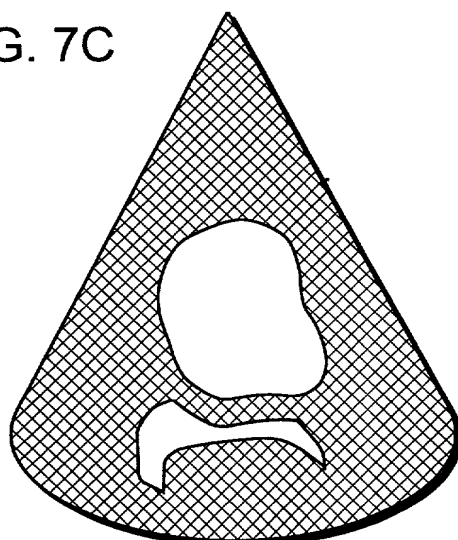
BEFORE EQUALIZATION

FIG. 7B



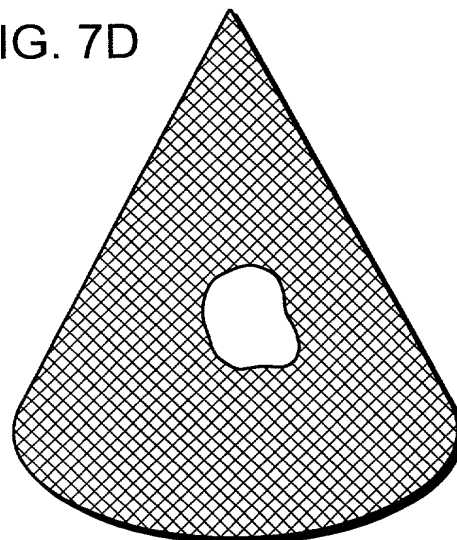
AFTER EQUALIZATION

FIG. 7C



AFTER BINARIZATION  
CONVERSION

FIG. 7D



AFTER DEGENERATE  
OPERATION

FIG. 8A

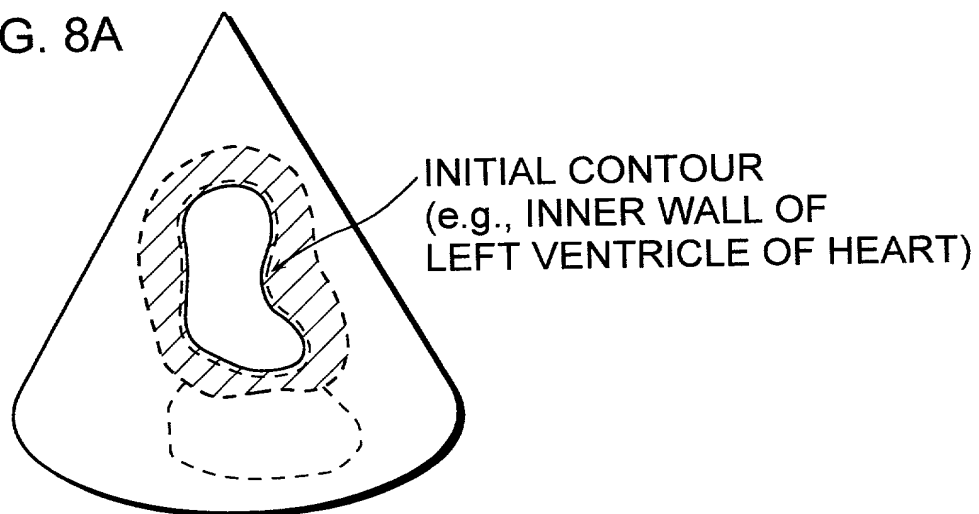


FIG. 8B1

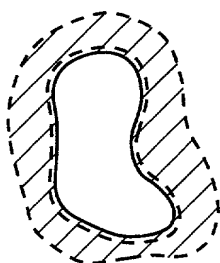


FIG. 8B2

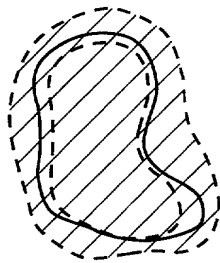


FIG. 8B3

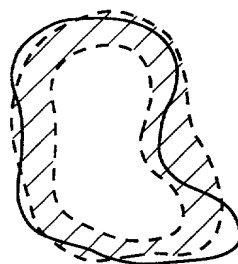


FIG. 8B4

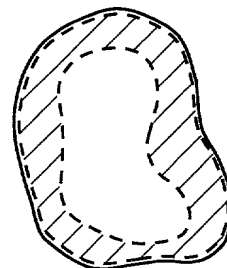
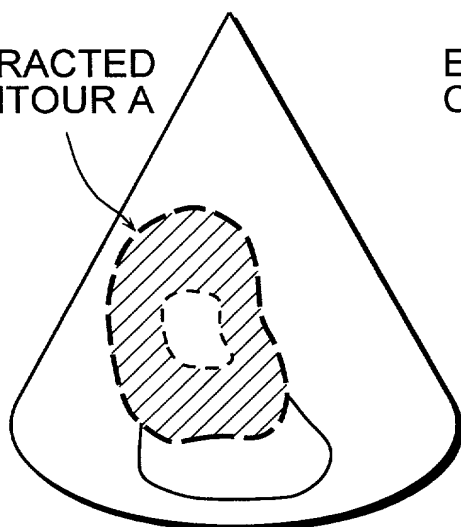




FIG. 9A

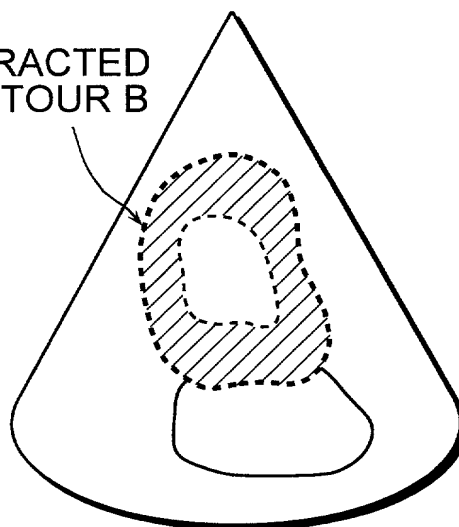
EXTRACTED  
CONTOUR A



CONTOUR A

FIG. 9B

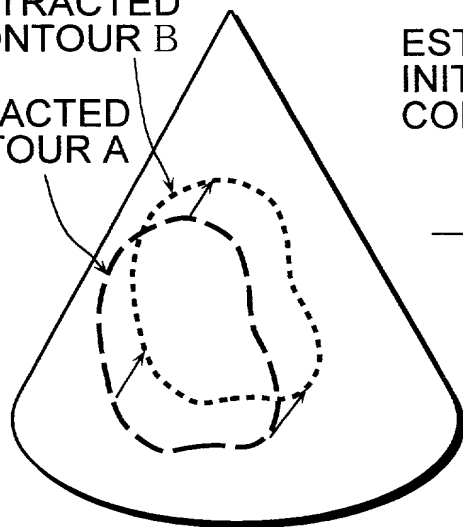
EXTRACTED  
CONTOUR B



CONTOUR B

FIG. 9C

EXTRACTED  
CONTOUR B  
EXTRACTED  
CONTOUR A



ESTIMATED  
INITIAL  
CONTOUR

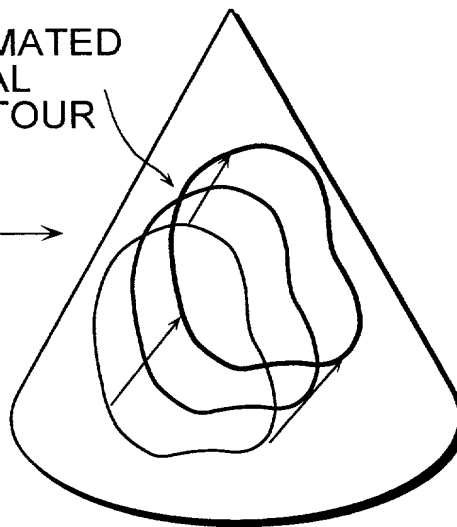
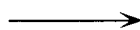


FIG. 10

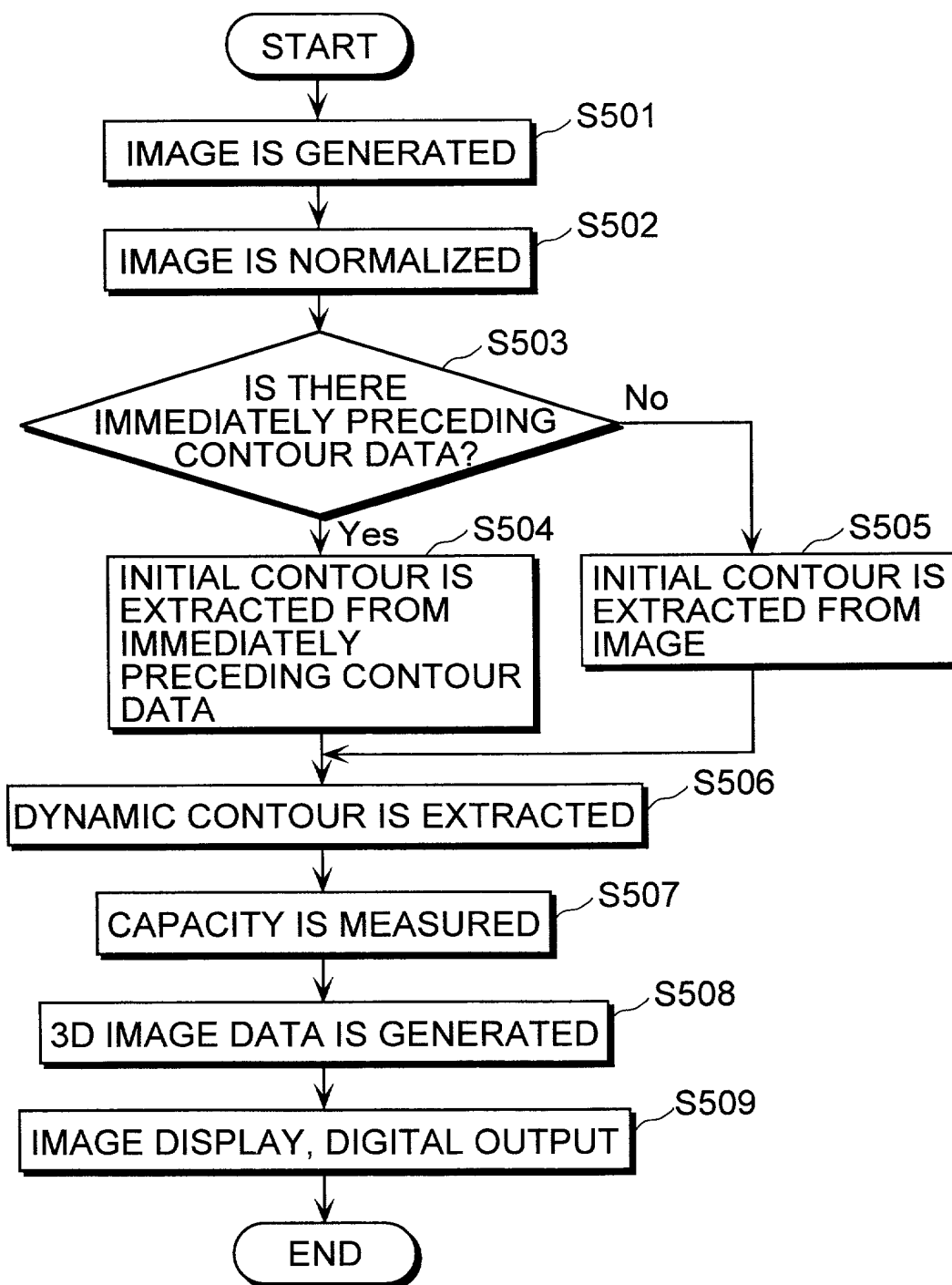


FIG. 11

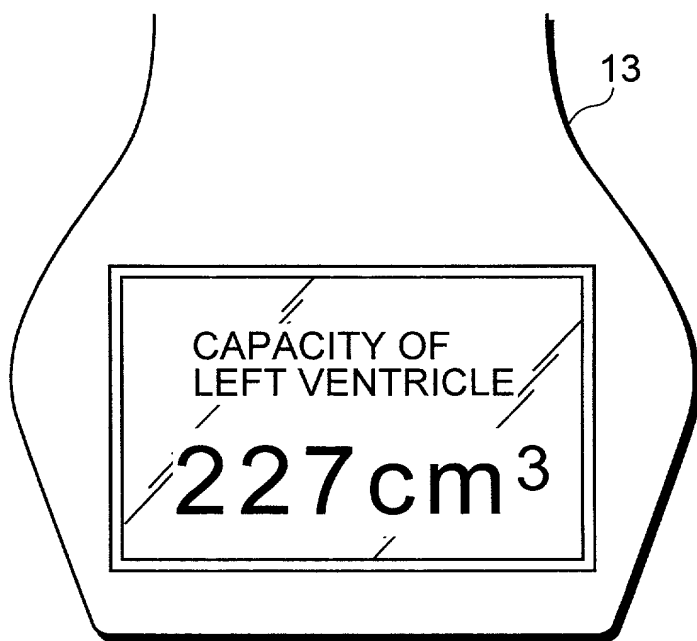


FIG. 12

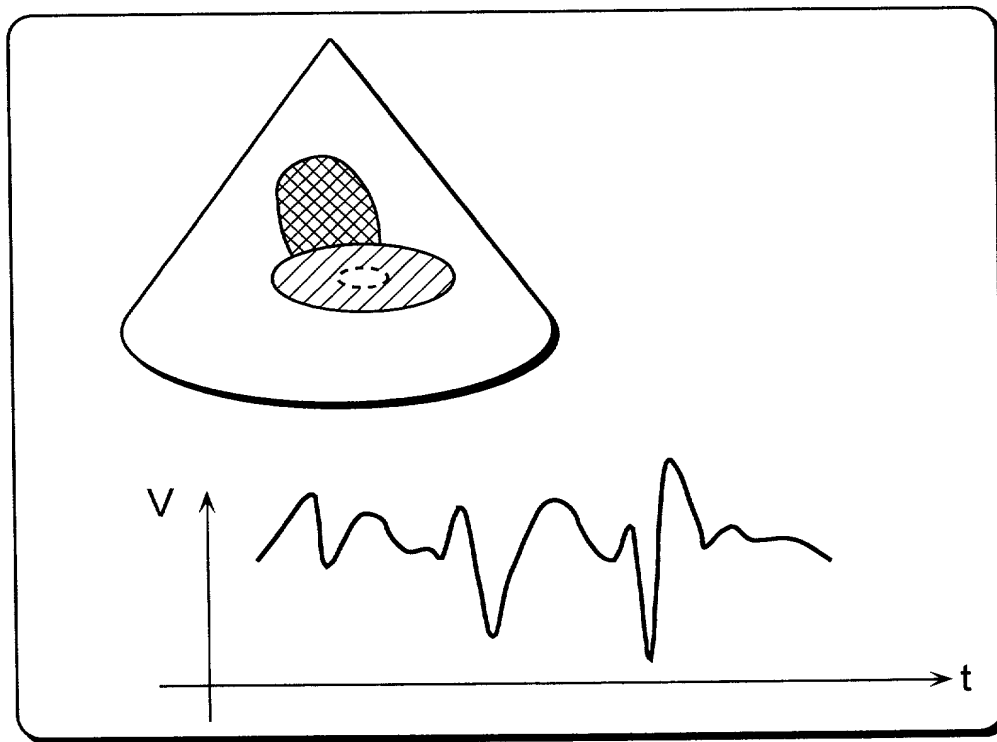


FIG. 13

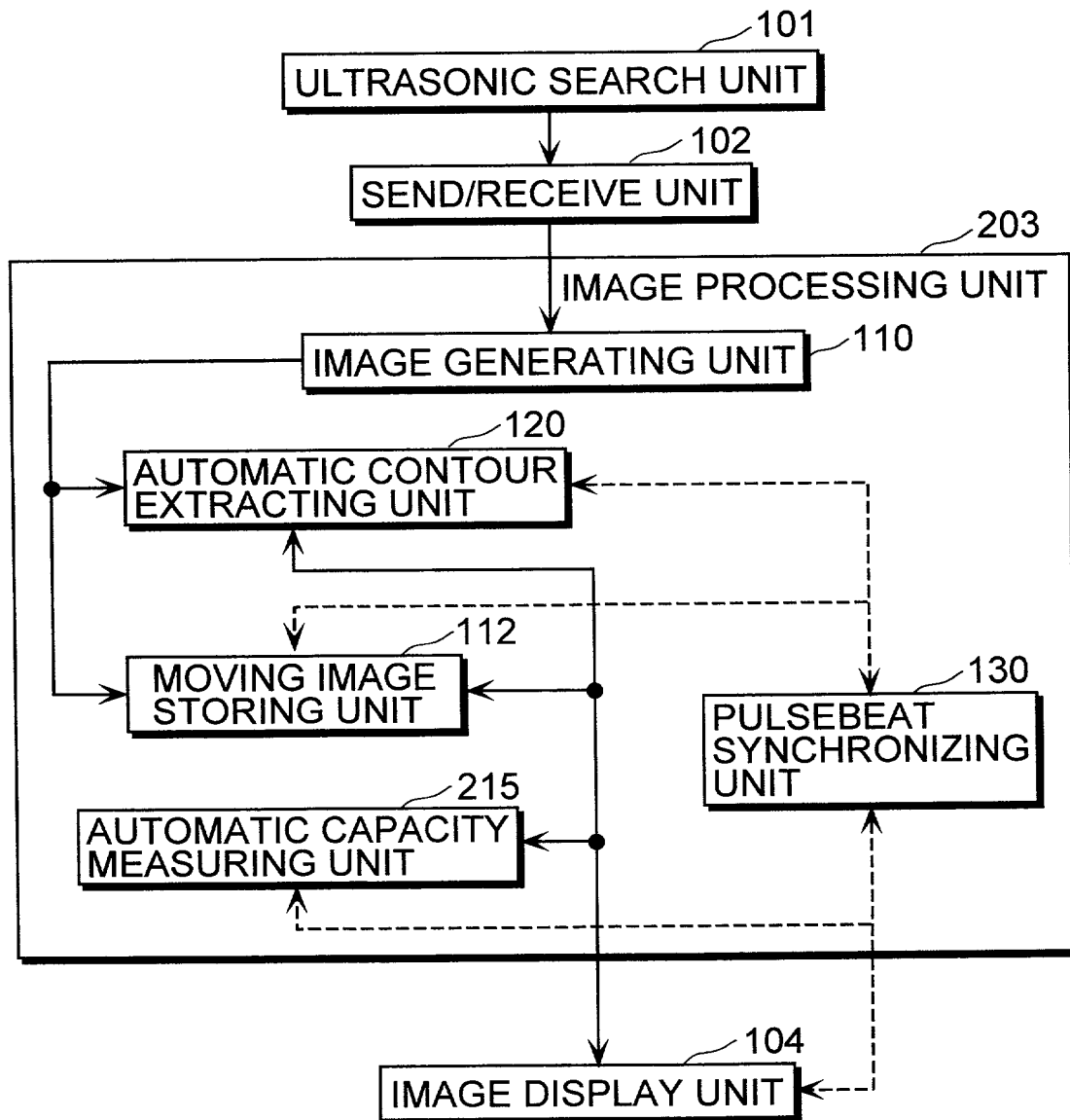


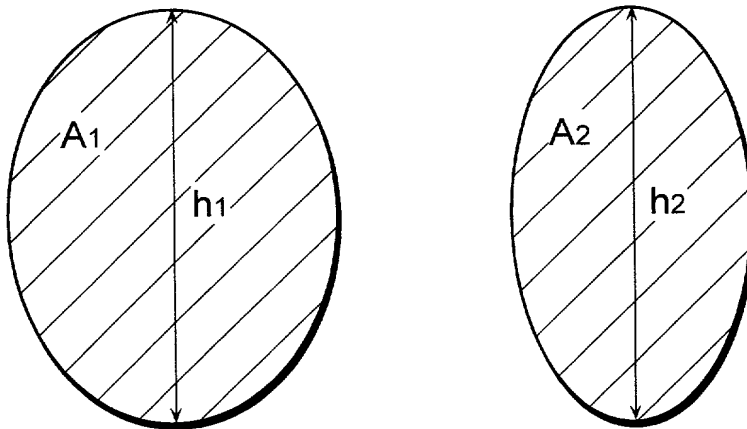
FIG. 14

BIPLANE AREA LENGTH METHOD

MAJOR AXES  $h_1$  AND  $h_2$ , OF WHICH LONGER ONE IS  $h$ .  
CROSS-SECTIONAL AREAS  $A_1$  AND  $A_2$



$$\text{VOLUME } V = 8A_1 A_2 / 3 \pi h$$



SECTIONS THAT SHARE SAME  
AXIS AND ARE ORTHOGONAL TO EACH OTHER

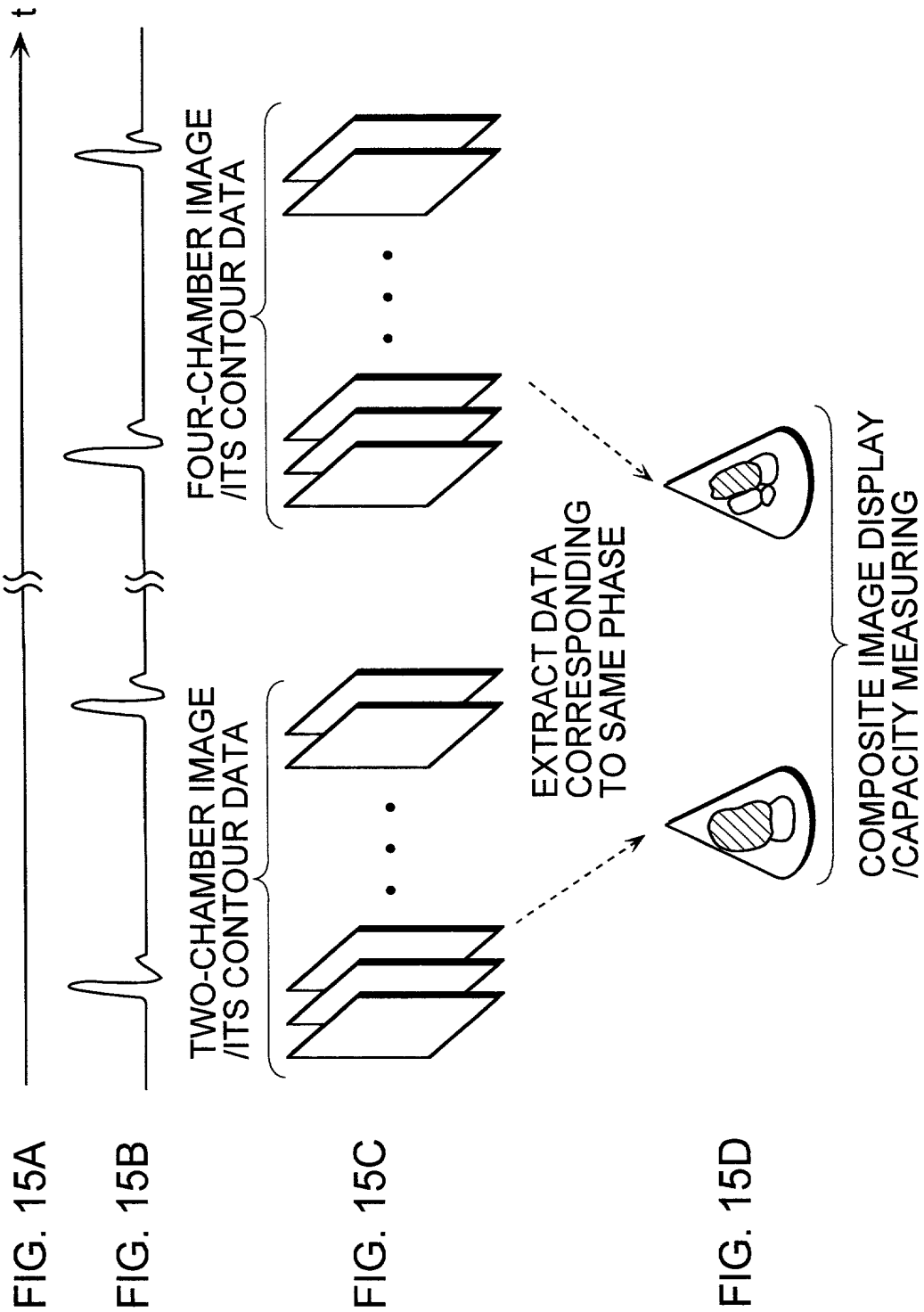


FIG. 16

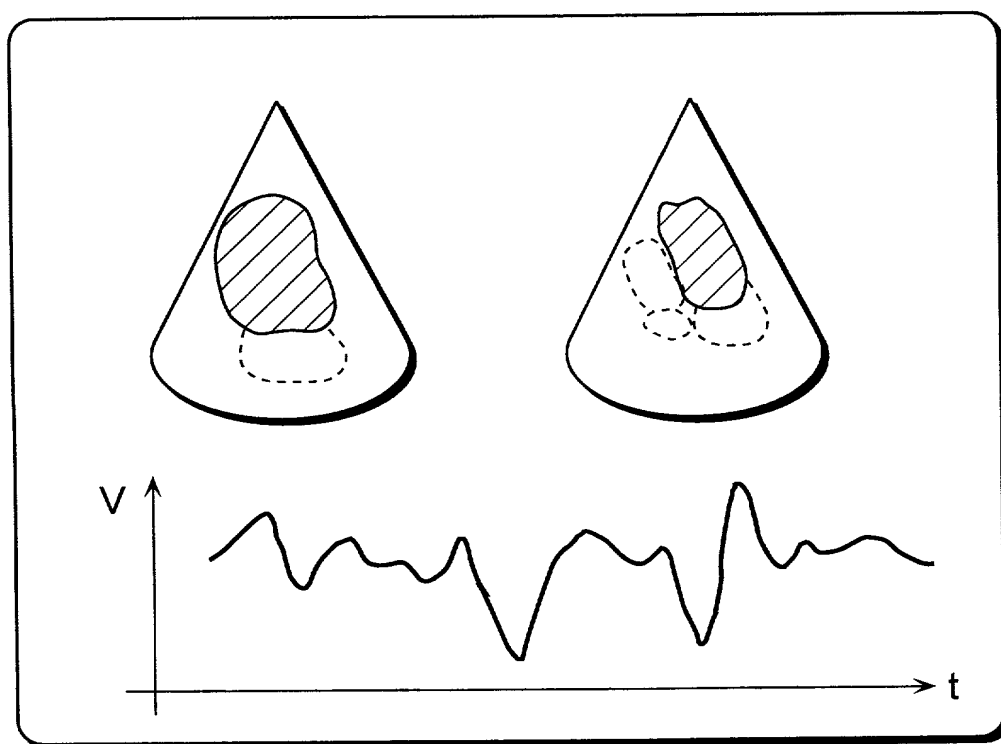




FIG. 17A

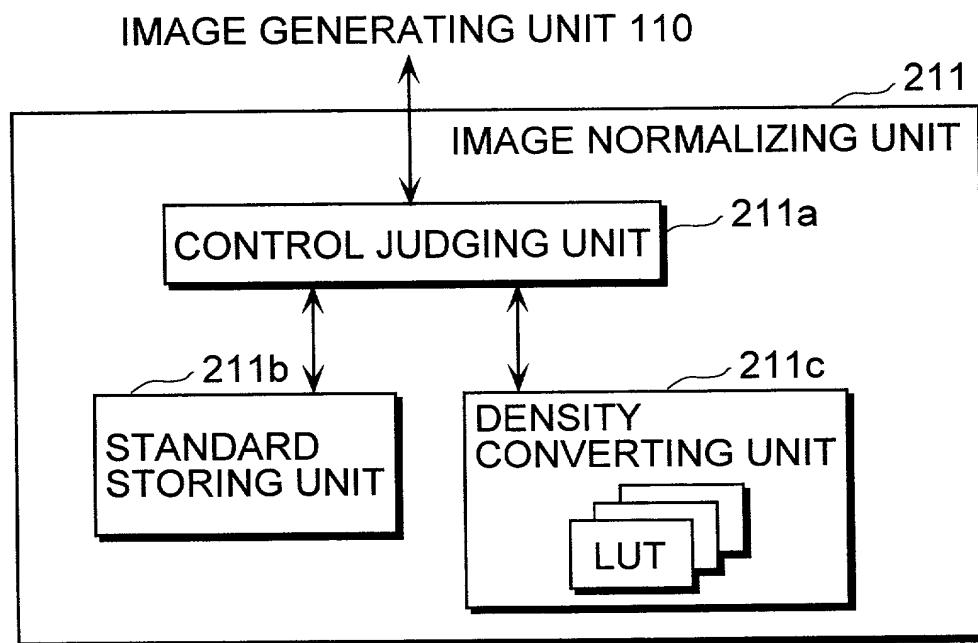


FIG. 17B

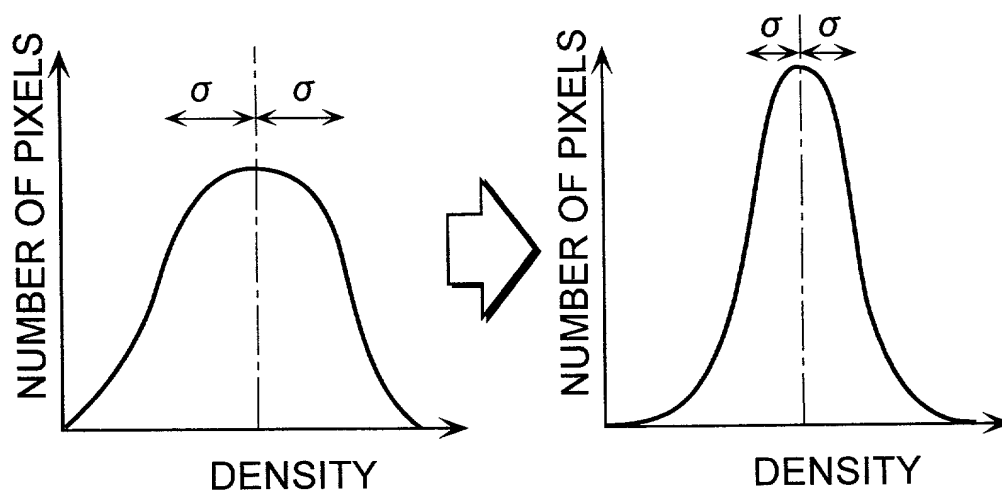


FIG. 18

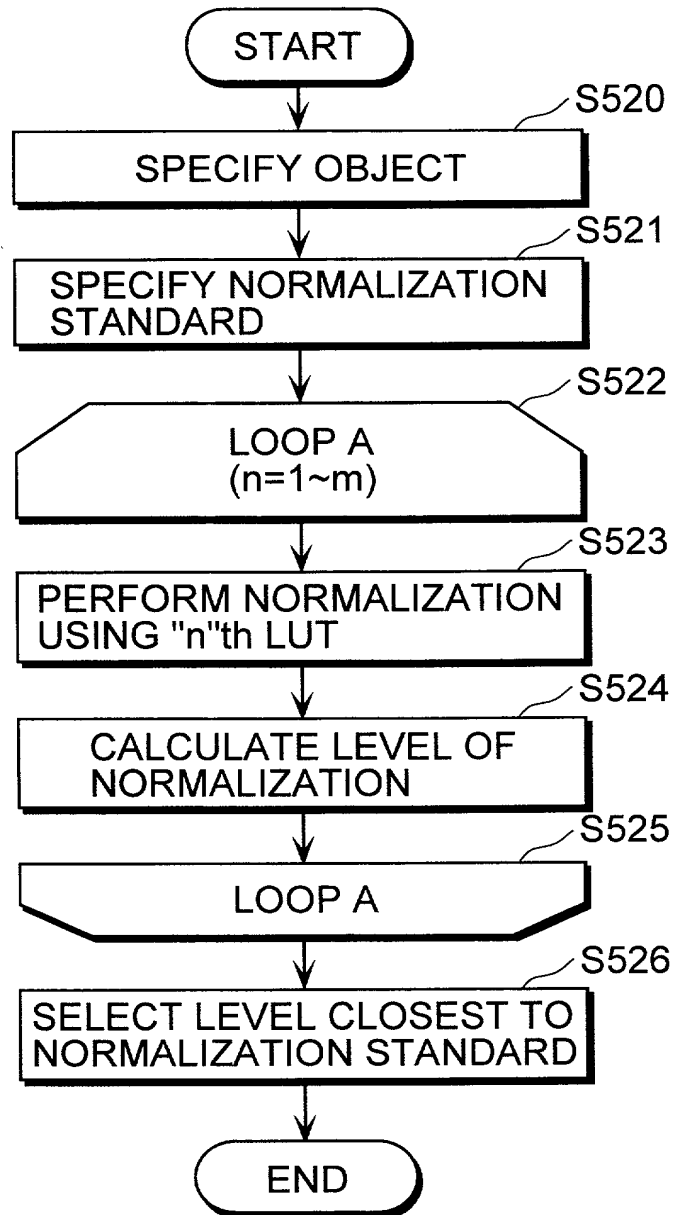
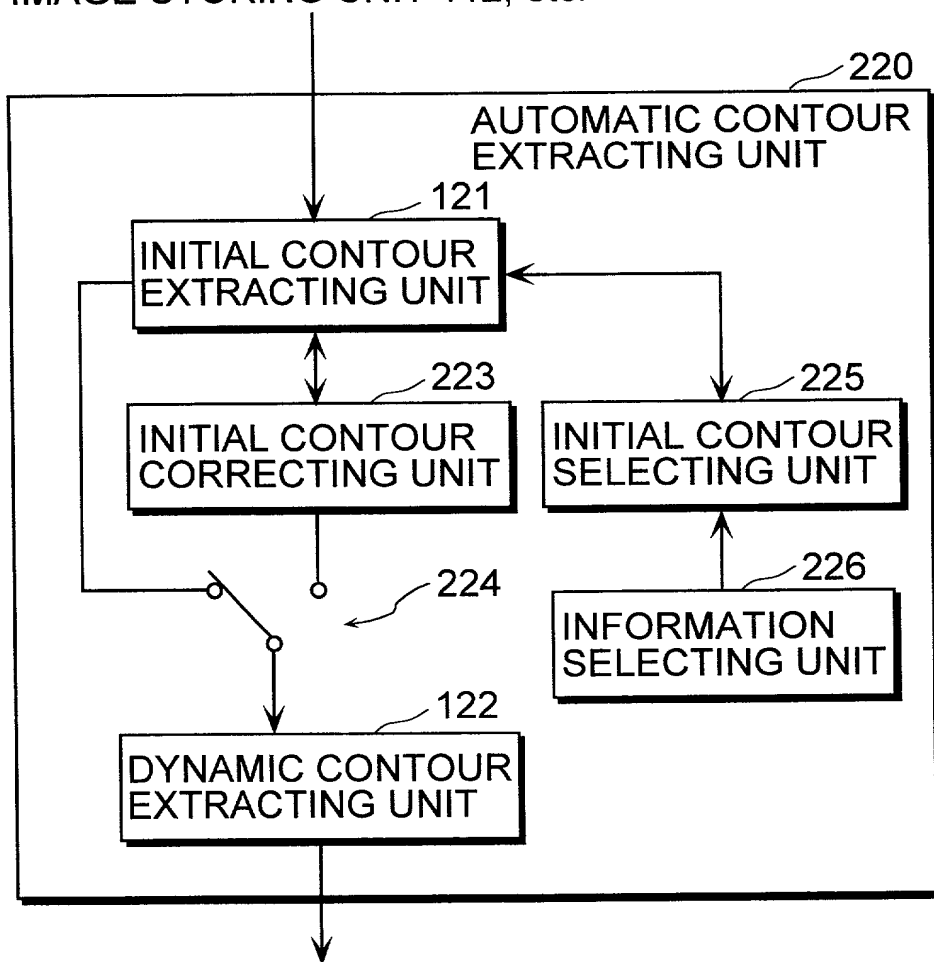


FIG. 19

FROM IMAGE GENERATING UNIT 110, MOVING  
IMAGE STORING UNIT 112, etc.



TO AUTOMATIC CAPACITY MEASURING UNIT 115,  
3D IMAGE GENERATING UNIT 116, etc.

FIG. 20

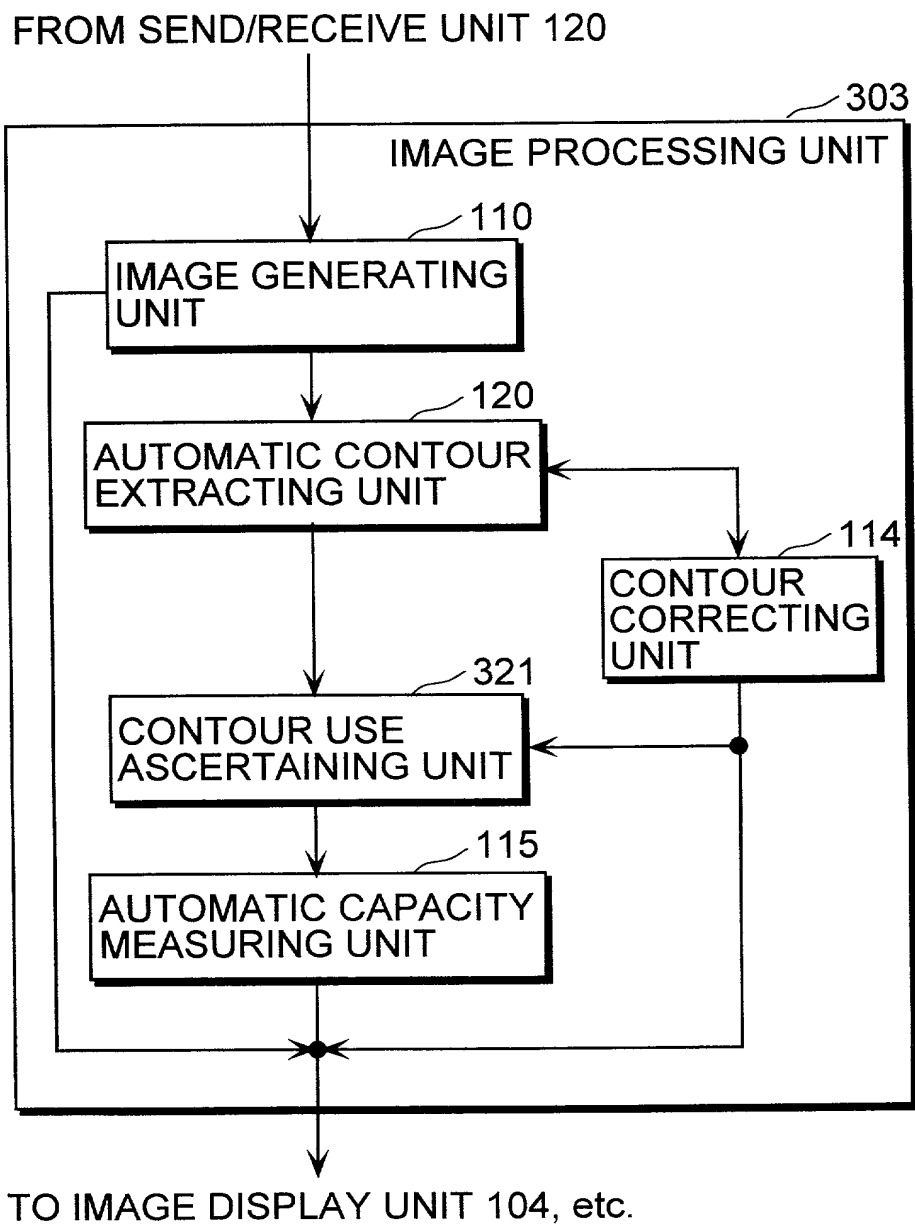


FIG. 21

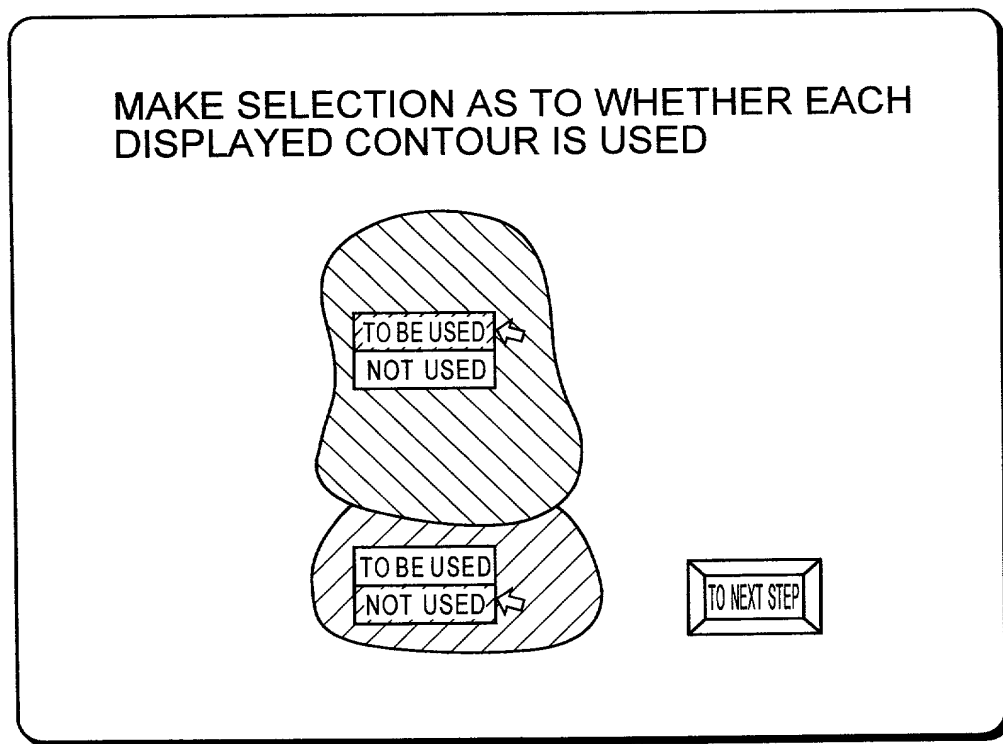
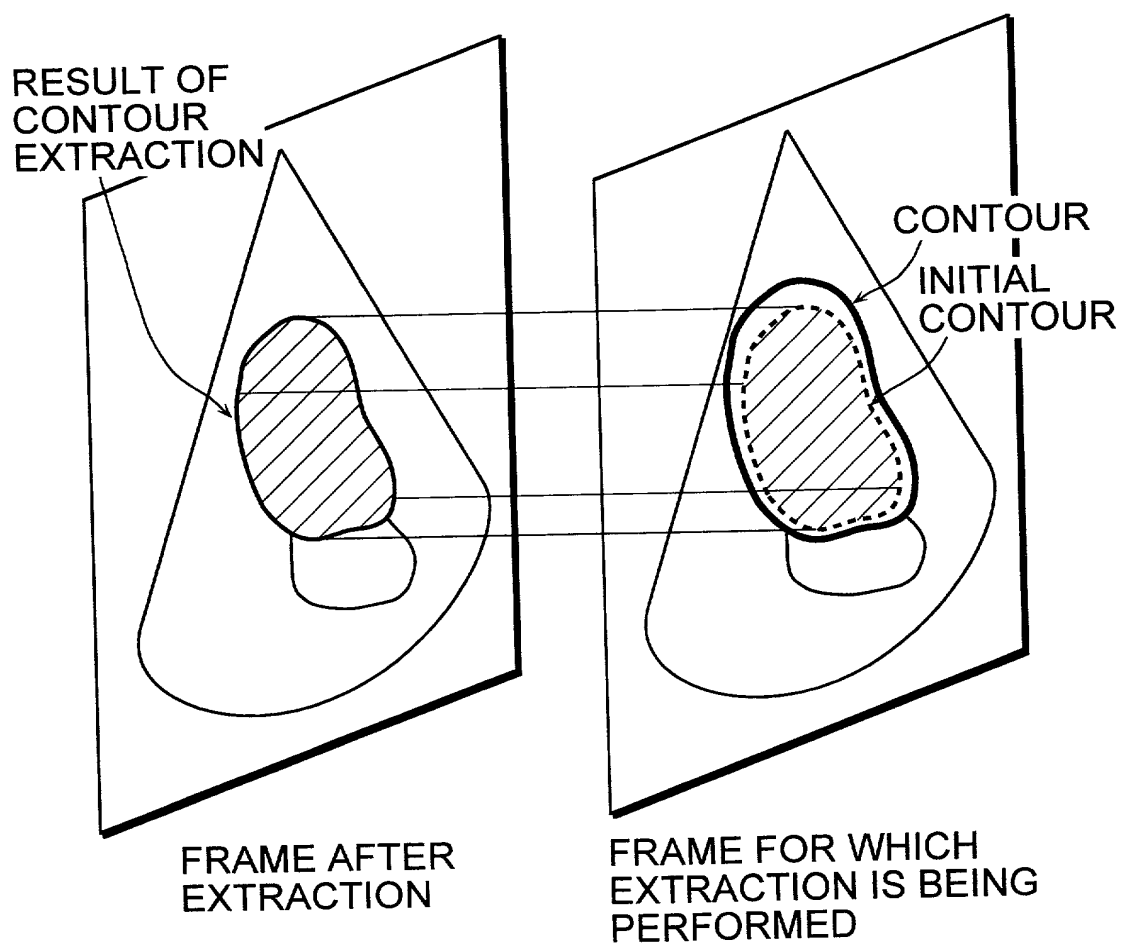
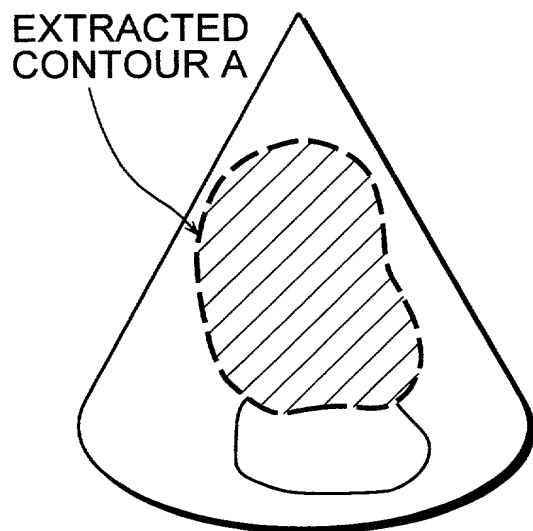


FIG. 22



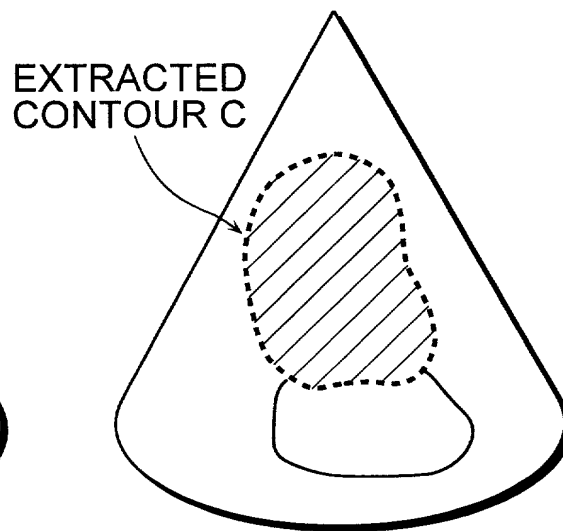
100583316 013003

FIG. 23A



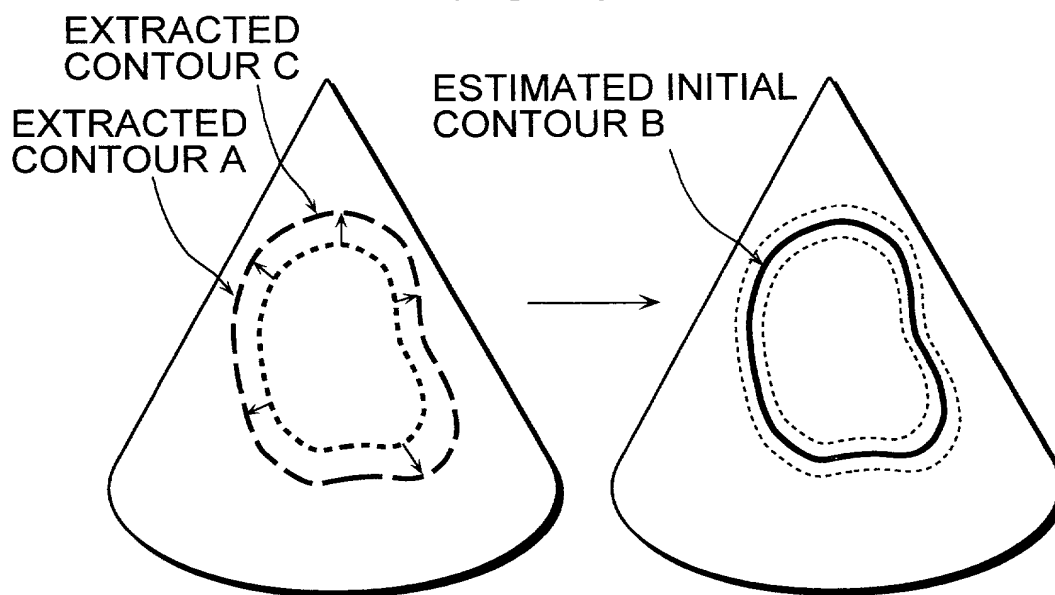
EXTRACTION RESULT A

FIG. 23B



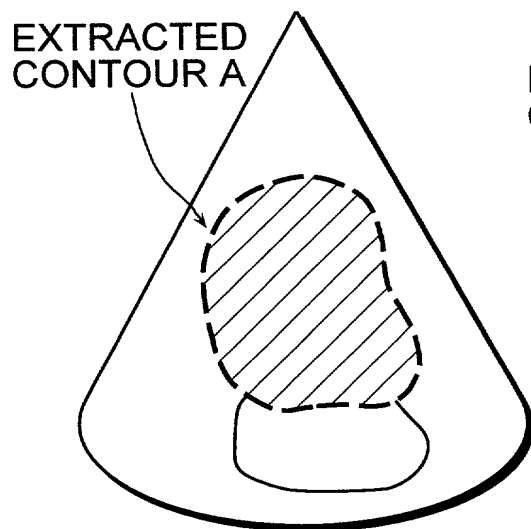
EXTRACTION RESULT C

FIG. 23C



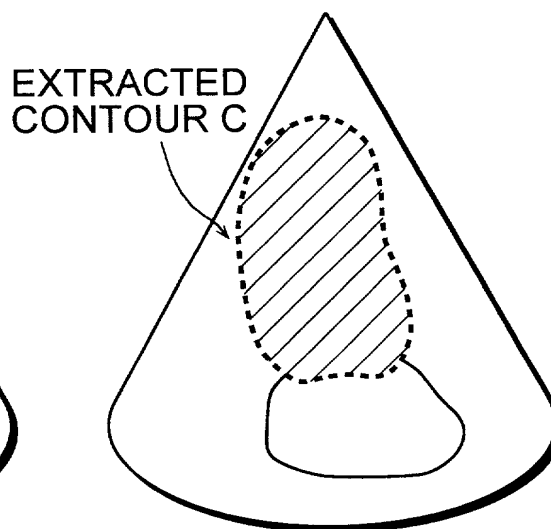
EXAMPLE OF INITIAL CONTOUR  
SETTING BY INTERPOLATION

FIG. 24A



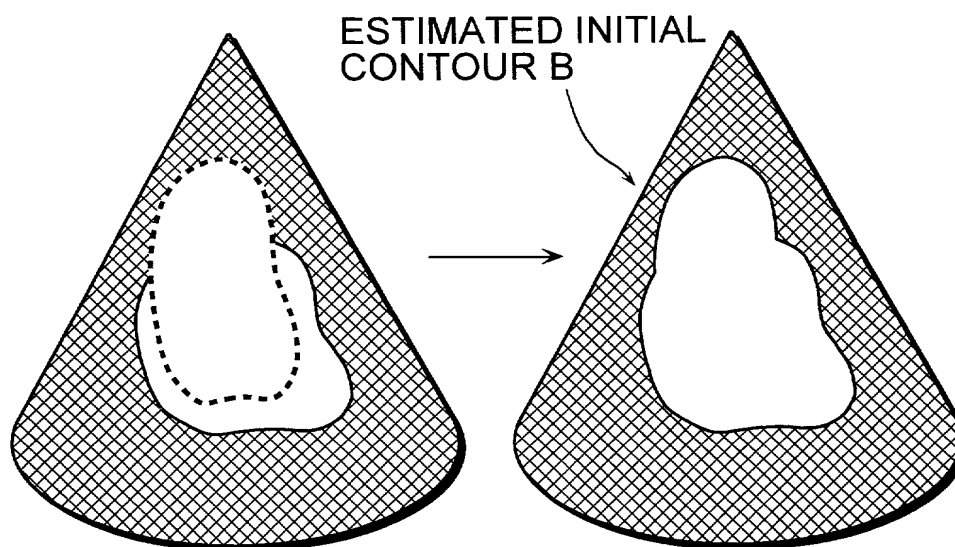
EXTRACTION RESULT A

FIG. 24B



EXTRACTION RESULT C

FIG. 24C

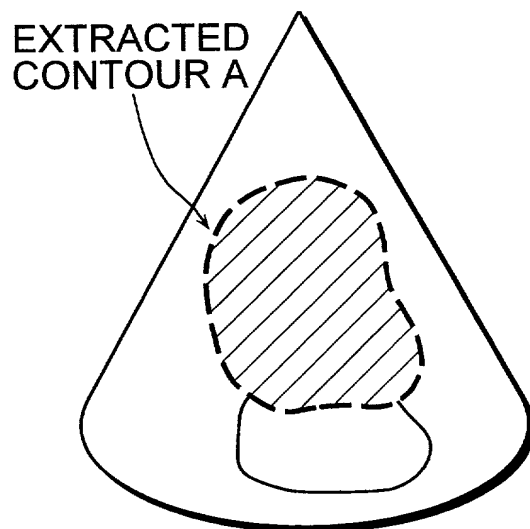


EXAMPLE OF INITIAL CONTOUR SETTING BY  
BINARIZATION CONVERSION/OR-OPERATION



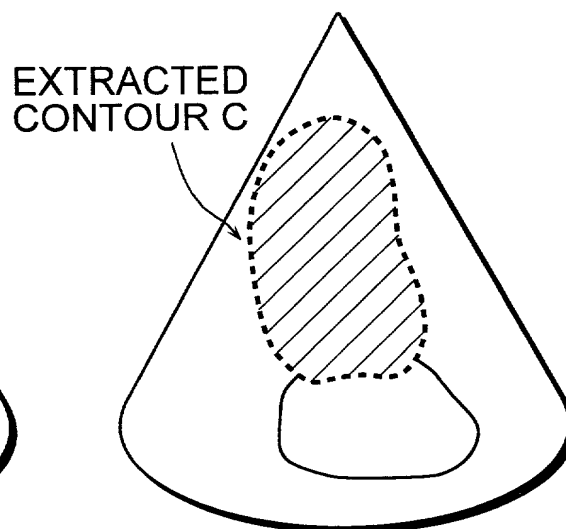
20050316.013002

FIG. 25A



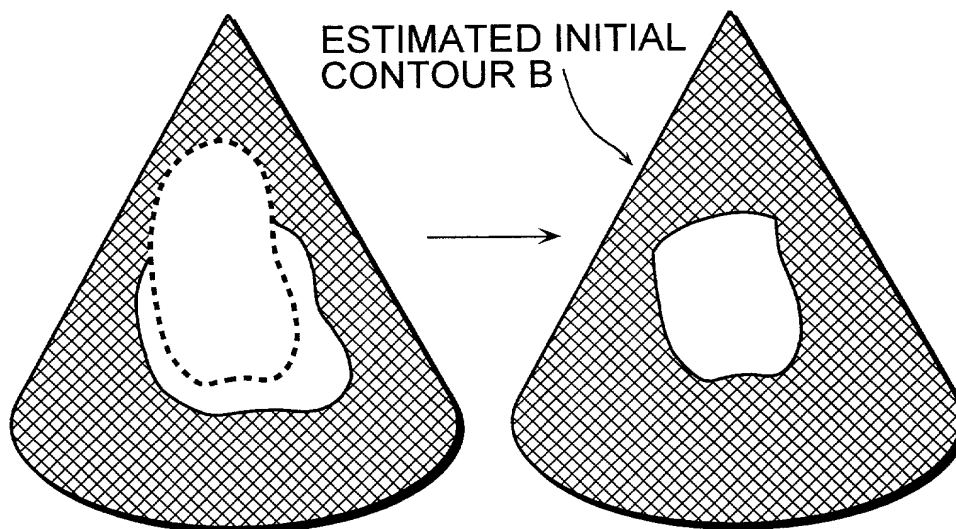
EXTRACTION RESULT A

FIG. 25B



EXTRACTION RESULT C

FIG. 25C



EXAMPLE OF INITIAL CONTOUR SETTING BY  
BINARIZATION CONVERSION/AND-OPERATION

FIG. 26

SIMPSON METHOD

RADIUS  $A_i$  (OR CROSS-SECTIONAL AREA  $S_i$ )  
OF EACH SLICE

INTERVAL  $h$  BETWEEN TWO SLICES



$$\begin{aligned}\text{VOLUME } V &= \sum S_i \times h \\ &= \sum (\pi \times A_i^2 / 4) \times h\end{aligned}$$

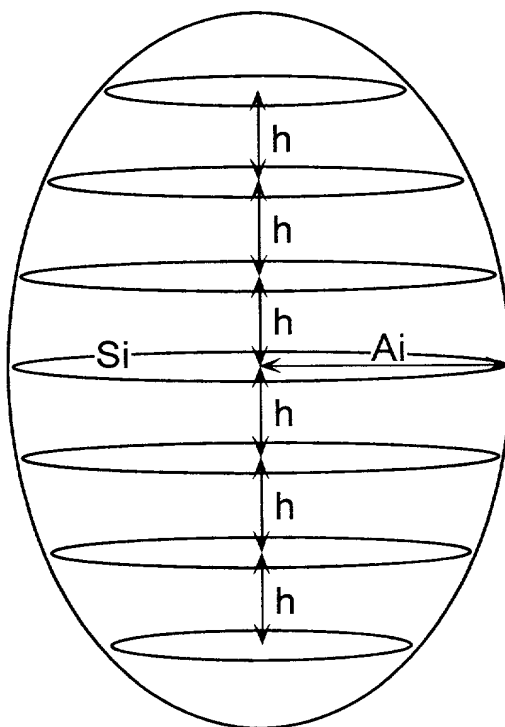


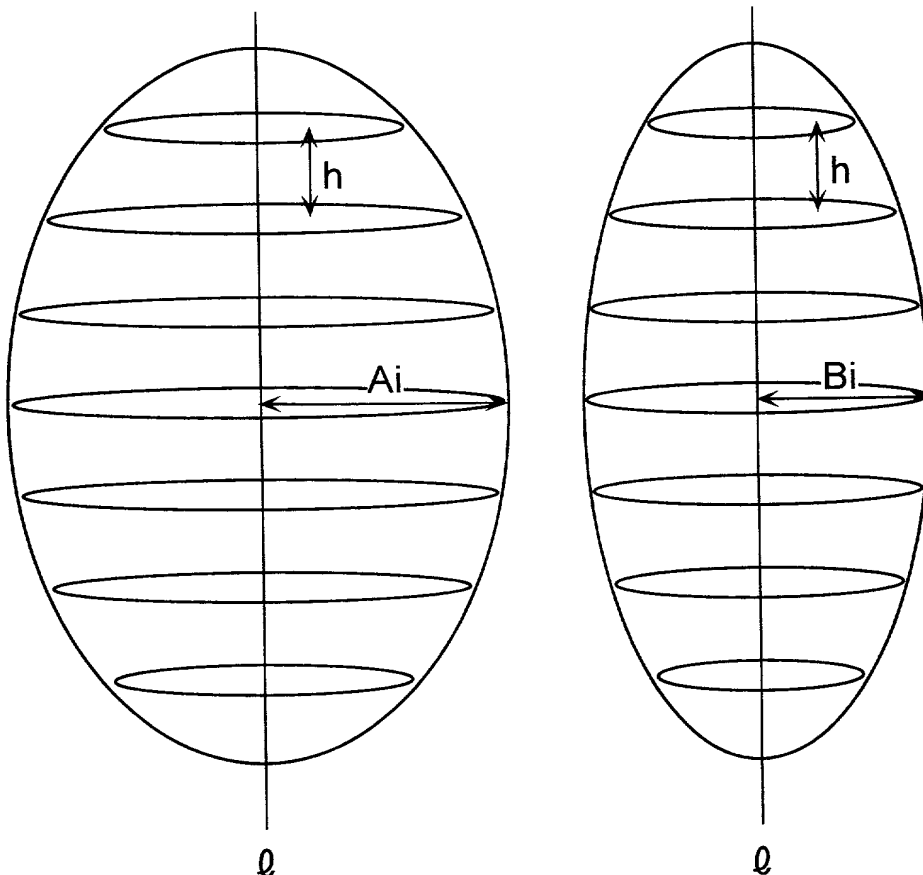
FIG. 27

MODIFIED SIMPSON METHOD

EACH RADIUS  $A_i/B_i$  OF TWO CROSS SECTIONS  
THAT ARE ORTHOGONAL TO EACH OTHER  
INTERVAL " $h$ " BETWEEN SLICES



$$\text{VOLUME "V"} = \sum A_i B_i \times h \pi$$



CROSS SECTIONS THAT SHARE SAME  
AXIS " $\varrho$ " AND ARE ORTHOGONAL TO EACH OTHER

FIG. 28

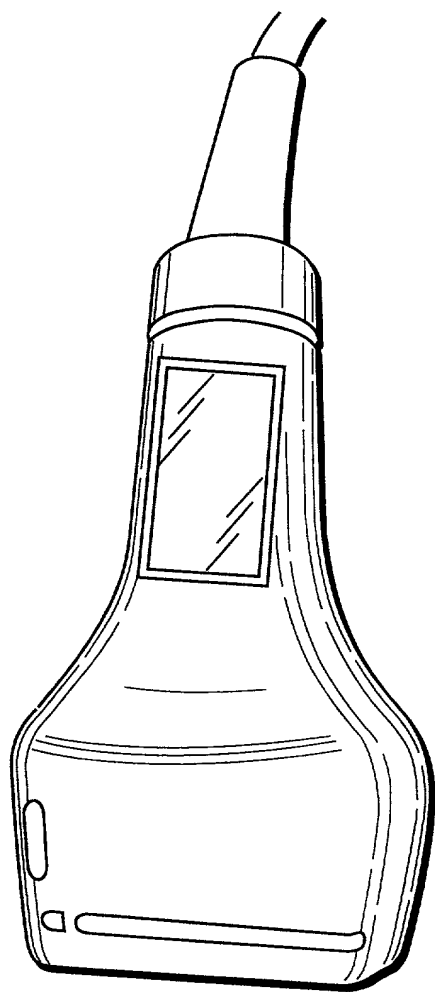
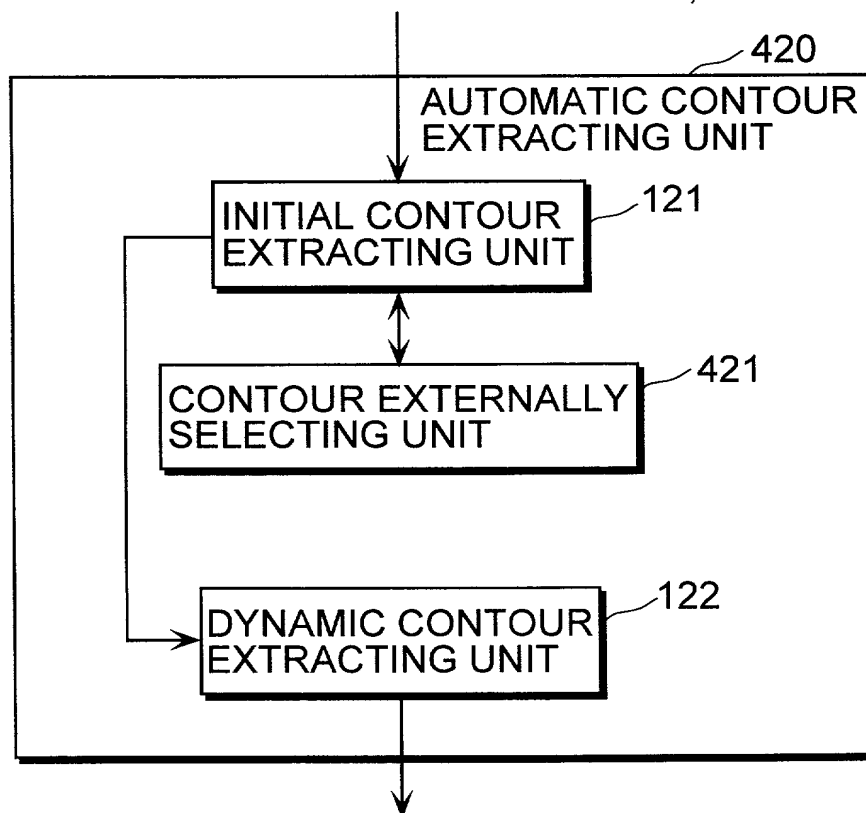


FIG. 29

FROM IMAGE GENERATING UNIT 110,  
MOVING IMAGE STORING UNIT 112, etc.



TO AUTOMATIC CAPACITY MEASURING UNIT 115,  
3D IMAGE GENERATING UNIT 116, etc.

FIG. 30

